

INTRODUCTION TO COMPUTERS

A computer is defined as an electronic device that follows instructions to accept input, process the input and then produce information as the output. Computers can be programmed to perform functions greater than what the human mind can calculate. They have aided humanity in achieving in what was once thought to be impossible. They have been crucial in the development of mankind, therefore it is important we understand how these devices work so that we can utilise them better and further develop our species.

As we have defined earlier computers can be programmed to accept input, the input can be given to the computer through peripheral devices example of these devices are:

- Mouse
- Keyboard
- Camera

These devices are used to input data to the computer to be processed there are many more input devices but these are just an example.

There are two major components of a computer:

- Hardware
- Software

1. Hardware

The hardware of a computer refers to the physical components that make up the computer. These devices are crucial in the operation of a computer. Some of these devices provide the computer with power, others are input output devices and some are the brain of the computer.

Here are some of the hardware devices commonly found on modern computers:

- Central Processing Unit (CPU)

- Memory
- Storage Devices
- Motherboard
- Input and Output devices
- Motherboard

These are some of the most crucial hardware components of a computer. I will elaborate the functions and importance of each one of them below.

1. Central Processing Unit (CPU)

This is the brain of the computer. It is responsible for processing the instructions and data it receives from the input devices and outputs them to an output device. The CPU is the most important part of the computer. It determines how fast a computer operates. The CPU operates in binary where data and instructions are represented in 1s and 0s or a state of on or off.

Before the CPU executes any command that command is stored in memory and the CPU has to pull it from memory to execute it.

The bigger the memory of a computer the better it will be at multitasking.

The CPU is divided into three main parts:

1. Control unit: The control unit controls all the processes and instructions the CPU is undertaking making sure all the processes are handled in an organised and efficient manner.

When the Arithmetic Logic unit executes instructions it goes to the control unit and the control unit decides where the information needs to be released.

2.Arithmetic Logic Unit(ALU): This is the most important part of the computer. It is responsible for handling all the logical and binary operations in the CPU. It performs mathematical operations on the input it receives.

3.Registers: Registers are used to store data for execution by the CPU. They are faster than RAM as they are closer to the CPU. They are used to hold data temporarily for execution by the CPU. They enable the CPU quick access to the data while processing.

2.Memory

These are the Physical components of a computer that hold data temporarily for use by the CPU for immediate or future use.

They are divided into two main types:

1.ROM (READ ONLY MEMORY)

This is non-volatile memory which means that it does not require power to hold data, it can hold data ever after the computer powers off. It permanently stores data and the data in it cannot be changed or interfered with.

Usually firmware code is stored in the ROM, such as the bios and other software from the manufacturer of the computer.

It holds the booting instructions of the computer.

2.RAM (RANDOM ACCESS MEMORY)

This is volatile memory which means that its data is lost when It loses power. RAM is the primary storage point of data for the CPU. Its content constantly changes during the running of the computer as the CPU loads programs into and out of RAM.

3.STORAGE DEVICES

These are the devices used by the computer to store, read and manipulate data. Common example of storage devices are:

- Hard Drives
- Flash Drives
- Optical Disks
- Memory Cards

Computers can store the output of their operations in storage devices and then display the content of that storage device as output to the user

4.Input Output Devices

These are devices which the computer uses to communicate with the outside world, they are the eyes and the ears of the computer.

1.Input device

These devices enable the user to communicate with the computer and input data to the computer to be processed.

Examples of input devices are:

- 1.Mouse
- 2.Keyboard
- 3.Touch Screens
- 4.Cameras
- 5.Microphones

2.Output Devices

These are devices which the computer uses to communicate back with the user. The computer uses these devices to display the processed data to the user.

Examples of output devices are:

1. Monitor (Visual Data)
2. Speaker (Audio Data)
3. Printer
4. Projector

5. Motherboard

This is the central hub of the connects all the hardware devices and manages the power of the computer. It is a crucial part of the computer and facilitates communication between the various hardware components of the computer.

2. Software

The second major component of the computer is the software. This is the part of the computer that we cannot see and touch.

Software is a vital part of the computer without it the hardware is useless.

These are the instructions that tell the computer what to do. It is the intangible of the computer system.

Software is divided into two:

1. Application software

This is software that helps end users perform general purpose tasks. It is designed to meet specific user needs and perform general purpose tasks. It enables end-users to accomplish various activities and solve specific problems.

Examples of application software include web browsers, word processors, email clients, video editing tools etc. it serves as an interface between the user and the computer.

2.System Software

This is software that enables the application software to interact with the computer. This software has direct access to the hardware. It is responsible for managing the hardware of the computer.

It provides a platform for application software to run on.

The primary component of the system software is operating system which controls the computer's resources, manages memory and facilitate hardware communication.